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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,290	02/26/2004	Akira Fujimoto	249406US2SRD	6559
22850	7590	09/17/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ALANKO, ANITA KAREN	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
			09/17/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/786,290	Applicant(s) FUJIMOTO ET AL.	
	Examiner Anita K. Alanko	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Upon further consideration, the allowability is withdrawn, prosecution re-opened, and the claims are rejected as detailed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-13 are rejected under 35 U.S.C. 103(a) as being obvious over Asakawa et al (US 6,825,056 B2).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the

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reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C.

103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Asakawa discloses a method comprising:

forming a polymer layer (col.6, line 66-col.7, line 2, Fig.2B) containing a block copolymer on at least one major surface 21 of a substrate 10 (Fig.2B);

subjecting the polymer layer to annealing treatment to phase-separate the copolymer (col.7, lines 4-6);

removing (col.7, lines 7-14, Fig.2C) one of the phases of the copolymer that has been phase-separated to form a mask layer having a pattern 22 formed of the residual phase; and

transcribing the pattern of the mask layer onto a surface of the substrate (col.7, lines 15-20, Fig.2D), thereby forming a surface-roughened substrate 18 having a large number of recessed/projected portions, projected portions of the recessed/projected portions being meet the following conditions:

(1) a mean circle-equivalent diameter ranging from 30-800 nm ($2\langle R \rangle$, Table 1, preferably 50-500 nm, col.16, lines 1-20, 32-33; the examples and the preferable ranges overlap the cited range);

(2) a mean height ranging of 180 nm ($\langle H \rangle$, Table 1) or 350 nm (Table 2), which are within the cited range.

Asakawa fails to disclose the standard deviations, the circularity coefficient and the area ratio. However, since Asakawa uses the same composition (PS-PMMA block copolymer) for the same purpose (to surface roughen) by the same method (RIE) as in the instant invention, the values are expected to be within the cited range. The character of surface roughness changes

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depending on their values, and the interaction of light changes depending on their values (see for example “Luminance effect” in the Tables), and thus they appear to reflect result-effective variables. It would have been obvious to one with ordinary skill in the art to vary them to the cited range because they appear to reflect result-effective variables which can be optimized. See MPEP 2144.05 IIB.

Asakawa also fails to disclose the use of a transparent substrate. However, since Asakawa is directed to forming a light-emitting device, it would have been obvious to use the method with a transparent substrate so as to enable the formation of display devices with transparent substrates.

Claims 14-22 are rejected under 35 U.S.C. 103(a) as being obvious over Asakawa et al (US 6,825,056 B2) in view of Bailey et al (US 7,229,273 B2).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in

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accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The discussion of modified Asakawa from above is repeated here.

As to claim 14, Asakawa fails to disclose the use of a cast molding substrate. Bailey teaches a molding method for forming optical devices (col.1, lines 61-67) that is cost-effective (col.4, lines 27-30). Bailey teaches a molding method comprising:

forming a pattern on a cast molding substrate (by etching, col.6, lines 53-64),

transcribing the pattern onto a surface of the cast molding substrate, thereby obtaining a cast mold pattern 12 having a large number of recessed/projected portions (to form the template, transcribing by etching) ,

press-contacting the cast mold pattern onto a resist film 40 to form a resist pattern 44 having a large number of recessed/projected portions (Fig.2C-2D, for multilayered devices see Fig.40); and

working the substrate by using the resist pattern as a mask to form recessed/projected portions in the substrate 18 (Fig.2E).

It would have been obvious to form a pattern in the cast mold substrate of Bailey as taught by Asakawa because Asakawa is a useful patterning technique for forming fine patterns by etching since etching is a desired technique for forming patterns in Bailey. Still further, it would have been obvious to use the cast mold pattern of Bailey in the modified method of Asakawa because Bailey teaches that such a method is cost-effective for forming fine patterns in

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optical devices. The resulting product would have features as cited in the modified method of Asakawa because Asakawa is used to initially form the patterns in the cast molding substrate.

Claims 5-13 are rejected under 35 U.S.C. 103(a) as being obvious over Sugiyama et al (US 7,037,738 B2).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Sugiyama discloses a method comprising:

forming a polymer layer (col.3, line 65-col.4, line 10, Fig.3B) containing a block copolymer on at least one major surface of a substrate 10 (Fig.3B);

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subjecting the polymer layer to annealing treatment to phase-separate the copolymer (col.4, lines 10-13);

removing (col.4, lines 14-20, Fig.3C) one of the phases of the copolymer that has been phase-separated to form a mask layer having a pattern 32 formed of the residual phase; and

transcribing the pattern of the mask layer onto a surface of the substrate (col.4, lines 21-34, Fig.3D), thereby forming a surface-roughened substrate having a large number of recessed/projected portions, projected portions of the recessed/projected portions being meet the following conditions:

- (1) a mean circle-equivalent diameter ranging of 100 nm (col.4, lines 40-41);
- (2) a mean height ranging of 200 nm (col.4, lines 41-42), which are within the cited range.

Sugiyama fails to disclose the standard deviations, the circularity coefficient and the area ratio. However, since Sugiyama uses the same composition (PS-PMMA block copolymer) for the same purpose (to surface roughen) by the same method (RIE) as in the instant invention, the values are expected to be within the cited range. The character of surface roughness changes depending on their values, and the interaction of light changes depending on their values (light extraction efficiency, col.4, lines 49-67), and thus they appear to reflect result-effective variables. It would have been obvious to one with ordinary skill in the art to vary them to the cited range because they appear to reflect result-effective variables which can be optimized. See MPEP 2144.05 IIB.

Sugiyama also fails to disclose the use of a transparent substrate. However, since Sugiyama is directed to forming a light-emitting device, it would have been obvious to use the

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method with a transparent substrate so as to enable the formation of display devices with transparent substrates.

Claims 14-22 are rejected under 35 U.S.C. 103(a) as being obvious over Sugiyama et al (US 7,037,738 B2) in view of Bailey et al (US 7,229,273 B2).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The discussion of modified Sugiyama from above is repeated here.

As to claim 14, Sugiyama fails to disclose the use of a cast molding substrate. Bailey teaches a molding method for forming optical devices (col.1, lines 61-67) that is cost-effective (col.4, lines 27-30). Bailey teaches a molding method comprising:

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forming a pattern on a cast molding substrate (by etching, col.6, lines 53-64),
transcribing the pattern onto a surface of the cast molding substrate, thereby obtaining a cast mold pattern 12 having a large number of recessed/projected portions (to form the template, transcribing by etching) ,
press-contacting the cast mold pattern onto a resist film 40 to form a resist pattern 44 having a large number of recessed/projected portions (Fig.2C-2D, for multilayered devices see Fig.40); and
working the substrate by using the resist pattern as a mask to form recessed/projected portions in the substrate 18 (Fig.2E).

It would have been obvious to form a pattern in the cast mold substrate of Bailey as taught by Sugiyama because Sugiyama is a useful patterning technique for forming fine patterns by etching since etching is a desired technique for forming patterns in Bailey. Still further, it would have been obvious to use the cast mold pattern of Bailey in the modified method of Sugiyama because Bailey teaches that such a method is cost-effective for forming fine patterns in optical devices. The resulting product would have features as cited in the modified method of Sugiyama because Sugiyama is used to initially form the patterns in the cast molding substrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/
Primary Examiner
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